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U. S. DEPARTMENT OF AGRICULTURE  
RURAL ELECTRIFICATION ADMINISTRATION  
TECHNICAL STANDARDS DIVISION

FUNCTIONAL SPECIFICATIONS FOR  
HOME FREEZER AND STORAGE CHEST  
20 CUBIC FOOT CAPACITY

Accepted by  
TECHNICAL STANDARDS COMMITTEE "A"  
March 5, 1943

These specifications describe the functional requirements for a chest of such construction and arrangement, and equipped with such accessories as may be necessary to freeze and store a portion of the meat, poultry, fish, fruit, and vegetables which constitute the food requirement of the rural family.

The term "chest" when used in these specifications is intended to refer to the complete assembly, including cabinet, condensing unit, and all accessories.

It is the intention of these specifications in all points, whether or not specifically covered herein, to obtain a first-class chest, of modern engineering design, construction, and workmanship. Consideration shall be given to the need for such features as shelves, partitions, fan, accessibility of storage space and other factors which will affect the use of the chest.

The chest shall comply with all ASA, AIEE, ASME, NEMA, ASRE, or any other applicable standards. The bidder shall submit proof that the chests to be supplied under these specifications conform to the standards of the Underwriters' Laboratories, Inc., as regards fire and casualty hazards. The listing of the Underwriters' Laboratories, Inc., will be accepted as conforming with this requirement.

SERVICE CONDITIONS

To a large degree, the chest will be used in rural areas not readily accessible to service centers, and every reasonable precaution is to be exercised to provide a trouble-free unit. Construction and assembly shall be such that the condensing unit (together with the evaporator in completely sealed units) may be readily replaced by locally available mechanics and without factory facilities.

The chest shall be suitable for housing in both heated and unheated buildings, and temperatures of a minus 10 F shall cause no harmful effects to it.

CABINET

General: The cabinet shall be of the top-opening type. The chest may be shipped either completely assembled or with the compressor detached from the cabinet, in which case provisions shall be made for assembly so the unit will be ready for operation upon release to the purchaser.

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Materials: Materials used in the cabinet or any part thereof shall have no deleterious effects on foodstuffs. All lumber shall be termite-proofed.

Size: The usable volume of the cabinet shall be approximately 20 cubic feet, approximately 5 cubic feet comprising the freezing compartment and the remainder storage space.

Dimensions: It shall be possible to move the chest through a 30-inch doorway. To accomplish this, it will be permissible to construct the lids or any projecting parts in a manner to render them easily removable and accurately replaceable.

Interior Surface: The interior shall be so constructed as to provide a sanitary, easily-cleaned surface. It shall be smooth so as to permit easy removal of frost.

Shelving: Depending on the shape and arrangement of the freezing compartment, consideration shall be given to the need for suitable shelves to allow proper circulation of air about food being frozen.

Drain: If a drain is provided, it shall permit moisture removal with the box in a level position and shall be of such construction as to prevent direct conduction of heat to the inner liner of the cabinet.

### CONDENSING UNIT

Compressor: The compressor shall be an air-cooled unit. It shall be readily accessible for servicing.

Motor: The compressor motor shall not exceed one-half hp in size, shall be of the capacitor type, and shall be suitable for single-phase, 60 cycle, 120-240 volt service. It shall be protected by a suitable overload device.

### PERFORMANCE

General: The chest shall comply with the tests herein listed, with the machine in adjustment for normal operation.

Temperature Control: An automatic temperature control adjustable within a range of approximately minus 20 to plus 20 degrees F shall be used to control storage temperature. The control shall be capable of maintaining the temperature of the storage compartment within two degrees plus or minus of the temperature at which it is set except when sharp freezing is being done. At time of delivery, it shall be set to provide a storage compartment temperature of zero F with an allowable differential of two degrees plus or minus.

Freezing Rate - Freezing Compartment: It shall be possible in 14 hours to freeze 45 pounds of water placed in 47 closed pint waxed cup containers. Cups are to be of the type manufactured by the Lily-Tulip Cup Company, and known as Nestrile, or equivalent. The initial temperature of the water is to be not less than 80 F. The storage compartment is to be empty and the chest shall have been operated with automatic control at a temperature of zero F,

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plus or minus two degrees, for not less than 24 hours immediately before the test. The ambient temperature shall be not less than 80 F and water shall be considered frozen when it reaches 28 F and the air temperature in the freezer compartment reaches 5 F.

Storage Compartment Temperature: With the storage and freezer compartments empty and with an ambient temperature of 80 degrees F, it shall be possible to maintain a temperature of zero F, plus or minus two degrees with an average energy consumption of not more than 3.75 kilowatt hours per 24 hours. This test shall extend over a continuous period of not less than 96 hours.

Under this requirement, a temperature of zero F or less, plus or minus the allowable variation, shall be met at all points within the storage volume located at and below five inches from the inside top surface of the chest.

Guarantee of Performance: The seller shall supply complete descriptive material, give a guarantee of, and provide data showing the performance and conditions for tests herein described as "Freezing Rate-Freezing Compartment" and "Storage Compartment Temperature."

#### WARRANTY

The seller shall warrant all home freezer and storage chests furnished hereunder to be free from defects in material and workmanship, and the seller will repair or replace any chest or chests or any part thereof which may be found to be defective in material or workmanship within a period of one (1) year from date of delivery; provided, however, that if within three (3) years after the date of delivery any defect shall be found in the material or workmanship of that portion of the chest known as the cabinet, such defect will be remedied by and at the expense of the seller. This warranty will not apply to any chest or part thereof, which has been subjected to any accident, alteration, abuse or misuse. The parts in question shall be returned to the seller transportation charges prepaid.

#### INSTRUCTIONS

Full instructions regarding installation, care, adjustment, and operation shall accompany each unit.

